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ABSTRACT

This paper describes and explains the 20 elements of the International Organization for Standards 9000 (ISO 9000) series, a model for quality assurance in the business processes of design/development, production, installation and servicing. The standards were designed in 1987 to provide a common denominator for business quality particularly to insure that processes are in place and operating in the areas of management, order processing, design, planning, procurement, material handling, production, inspection, and testing. A discussion of the benefits of adopting ISO 9000 notes that most currently certified companies are in the European Common Market. The 20 basic elements of ISO 9000 are: (1) management responsibility; (2) quality system; (3) contract review; (4) design control; (5) document control; (6) purchasing; (7) product supplies; (8) product identification and traceability; (9) process control; (10) inspection and testing; (11) inspection, measuring and test equipment; (12) inspection and test status; (13) control of non-conforming product; (14) corrective action; (15) handling, storage, packaging and delivery; (16) quality records; (17) internal quality audits; (18) training; (19) servicing; and (20) statistical techniques. The paper argues that ISO 9000 has implications for higher education and it examines and suggests applications of each standard to institutions of higher education. (Contains three references.) (JB)

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ED 363 163

ISO 9000 Quality Systems:

Application to Higher Education

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Roosevelt University October 4, 1993

ABSTRACT: This paper explains the basic elements of the International Organization for Standards (ISO) 9000 series model for quality assurance in design/development, production, installation and servicing. It is becoming a world wide standard. It examines each of the twenty elements and how these elements might be adapted and applied to higher education.

ISO 9000

The ISO 9000 is a set of international standards developed in 1987 to be used as a common denominator of business quality. It is designed to measure business processes. It does not directly measure leadership, customer satisfaction, profitability, financial stability or quality of the finished product. It does insure that the processes are in place and operating in the areas of management, order processing, design, planning, procurement, material handling, production, inspection and testing, but it does not establish the specific implementation, the how it is to be done. For example, in the element of statistical techniques, sampling procedures must be in place that ensure that products meet standards, but the company is free to choose the sampling technique that best suites its own particular needs. Documentation

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of the selection of the statistical procedure used and documentation of the ongoing sampling is, of course, required.

Companies can become ISO 9000 certified by an independent registrar. (The registrar is certified by the ISO.) Becoming certified is not an easy process; it can take up to two years, cost more than $100,000 for a manufacturing plant with 300 employees (Hockman, 1992, p.36) and disrupt the company during the process.

Benefits of ISO 9000

Why have over 30,000 companies taken the time, trouble and expense of becoming certified? Most of the certified companies are in the European Common Market(EC), where it has become the de facto market requirement. Companies that want to do business in the EC will have no choice. As more U.S. companies become certified, ISO 9000 will become important in the United States because competitors will be certified and as there is more media coverage of ISO 9000 standard. Customers, especially industrial customers, will perceive its importance.

The U.S. Department of Defense has embraced the ISO 9000 system but without the certification by registrars.

How does ISO 9000 make a company better? For managers that don't really understand what quality means ISO 9000 is a long way off. ISO 9000 goes beyond QC (quality control) and TQM (total quality management) in that the ISO standard includes twenty basic elements that affect quality. TQM is good in its commitment to continuous improvement, quality teams and customer satisfaction, but seems to lack specifics as to steps that must be taken. ISO 9000 has twenty interrelated elements.

The 20 Elements

The twenty elements as presented in the 1987 ISO 9001 International Standard are a bit confusing, a better understanding is gained by John T. Rabbitt in The ISO 9000 Book . The twenty basic elements are:

4.1 Management responsibility

4.2 Quality system

4.3 Contract review

4.4 Design control

4.5 Document control

4.6 Purchasing

4.7 Product supplies

4.8 Product identification and traceability

4.9 Process control

4.10 Inspection and testing

4.11 Inspection, measuring and test equipment

4.12 Inspection and test status

4.13 Control of non conforming product

4.14 Corrective action

4.15 Handling, storage, packaging and delivery

4.16 Quality records

4.17 Internal quality audits

4.18 Training

4.19 Servicing

4.20 Statistical techniques

(Rabbitt, 1993, p.13)

Implications for Higher Education

What does ISO 9000 have to do with higher education? In an institution that is bureaucratic, hierarchic in organization, slow to change and one that rarely murmurs the words "quality" or "customer satisfaction" can ISO 9000 have a place? Yes, each of the elements can be used, some directly like 4.1 Management responsibility, others by modification, like 4.15 Handling, storage, packaging and delivery.

How might the ISO 9000 system be applied to higher education. Each of the 20 elements will be examined and its relevance will be explored. Questions that an educational institution might ask itself are presented. This might serve as a possible starting point for your organization in exploring the ISO 9000 system.

4.1 Management: This includes items like having job descriptions that define authority and responsibility, training to understand your quality policy, documented quality policies and a clearly stated mission. Who is responsible for your quality system?

4.2 Quality System: The people and procedures that ensure things get done right is the quality system. Is everything you promise to deliver in fact delivered? Do you support everything that is in the university catalog? Do you deliver research commitments on time, within budget? Do the professors listed in the catalog really teach classes. It is important to remember that quality is a never ending process.

4.3 Contract review: This would include items such as procedures to support customers' inquires. This would include students and contracts with governments and industry. Are the requirement of service contracts defined?

4.4 Design control: How do you develop curriculum? How do you ensure that it does what you say it does? How relevant and up-to-date is the curriculum?

4.5 Document Control: This includes administrative information systems. If changes are made in requirements, how are these communicated? Do you have a process that maintains confidentiality and accuracy of records?

4.6 Purchasing: Purchasing and its interface with suppliers, users and administrators might be examined by answering these questions. Is there some rational plan in purchasing? Is it coordinated with what is going on in the classroom and laboratory? A simple example of smart purchasing would be related to PC software. Does every department use different, incompatible word processing software? Wouldn't it make sense to have one, maybe two at most word processing software packages purchased by site license rather than each department buying individual packages. This would save money and make documents more compatible. Another example would be the problem of classroom supplies. Are you supplying the needs of adjunct faculty or do they buy supplies out of their own pocket?

4.7 Product supplies: If students are viewed as a raw material, then how are we, in higher education, making sure that they meets our requirements. Higher education needs to be involved in helping to develop quality standards at each level down in the chain. Graduate schools need to help undergraduate schools, four-year schools need to coordinate with two-year schools, higher education needs to work with high schools to ensure the quality of their product. Finger pointing and blame spreading are not the same as help and cooperation. One of the major benifits of ISO 9000 is that it includes the sullpies in the quality process.

4.8 Product identification and traceability: Who is responsible for making sure that students are on-track and making progress? What processes are in place to monitor every students progress.

4.9 Process control: Are there established procedure? Are they documented? Are they communicated. What is going on in the classroom? Who is responsible for this? Are the students learning? Is knowledge being generated or are we producing junk?

4.10 Inspection and testing: In a manufacturing business this is the procedures that make sure the finished products is verified. In an education or training, students could be viewed as products. Have students learned? Are they prepared to do a job for which they are trained? Has new knowledge been created? Do we have controls in place to prevent fraud, plagiarism and abuse of grant money?

4.11 Measuring and testing: Are we using test and measurements that really test what we want or are we making students jump through hoops in the name of academic rigger?

4.12 Test status: This allows us to show that the product was tested . If a grade of "C" is average what does this really mean? If a student has a 3.95 grade average what does this really mean?

4.13 Control of non conforming products: What do we do with students that do not fit the norm? Examples would include: students with disabilities, students with weak educational backgrounds, students that are older, students that are brighter, students that already poses a high level of knowledge or expertise. These students need some way to be included in the system without having to be forced into the same pattern as everyone else. An example, a student taking a class to get credit when in fact they already know the material. Are we dealing with these students fairly? Black students

when entering college have a tendency to want business programs. When they are admitted to the university they may not be eligible for the business school, which may require a minimum number of hours and often has higher standard than the general admission to the university. If they take classes to improve study skills, reading and writing and do OK (read "C") in these classes they may have improved their chances of succeeding at the business school, but find that they are locked out because of low GPA. Is this fair? What is the success rate of our schools? Would we be embarrassed if everyone knew?

4.14 Corrective action: If there is a problem what is done to ensure it doesn't happen again. If a student fails in obtaining desired goals, why did this happen? How can it be prevented in the future? Football and basketball teams at well known schools have repeated violations of NCAA rules. What has happened to corrective action?

4.15 Handling, storage, packaging and delivery: This element will have to be adapted to fit the educational environment. Handling might refer to be student interface with the organization units such as the registrar, bursar, advising and , communications. Storage might be related to student safety and health. Packaging can be related to how, when and where classes are held. Delivery can be related to scheduling, mode of instruction and quality of instruction.

4.16 Quality records: Do you have a procedure that documents the quality of your product? Can records be accessed quickly, are they up to date?

4.17 Internal Quality audits: How do you ensure you are running your organization as you claim? The focus should be on **process** rather than inputs. For example, An accreditation agency may require that you have a library with 500,00 books and journals, but do the students use or need these?

Is access to information in electronic form more useful? Is the measure of books on the shelf obsolete? Are the professors up-to-date? Are knowledge and teaching skill of instructors more important than a degree from the right school? Is the internal quality audit an ongoing process?

4.18 Training: Higher education could be improved by training. How many dollars and how much time are devoted to training? From improving the way we answer the telephone, to gaining more grant money, how much real training is going on? Initating a quality program will require training.

4.19 Servicing: How are we ensuring that our product is as good as when first built. Are we leading students into lifetime learning? Are we doing follow-up on recent graduates to see if they are performing as expected? Are we in contact with government, business and the community to test whether we are meeting their needs?

4.20 Statistical techniques: Last, is statistical techniques. Are we using the correct techniques and does everyone who uses them know what to do when the process is out of control?

Conclusion

Hopefully, this paper will give you the desire to gain more knowledge of the ISO 9000 quality system. Explore the twenty elements in detail, adapt then to your particular situation. It would seem that compliance would be more important than certification. Quality is too important to be left to chance!

Higher education in the United States claims to be the very best in the world. From that position it is hard to see the need for quality improvement, but there was a time not long ago that the American automobile manufactures felt that they were the best in the world. World class competition has caused them to rethink what quality means.

Education will become competitive on a world wide bases. Will we have a world class product that is competitive in quality, price and availability?

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